

REMARKS

Claims 1-6, 8-10 and 31-42 are pending in this application. Claims 7 and 11-30 are canceled herein. Claims 1-6 and 8-10 are amended herein. Claims 31-42 are added herein. In view of these amendments and the following remarks, Applicant respectfully requests reconsideration of the claims.

Claims 2-10, 12-19, and 22-30 were objected to by the Examiner as having unclear formulations. The Examiner remarked that an appropriate form for the claims would be "A method of Claim X wherein...". Claims 2-6 and 8-9 are amended in view of the Examiner's remarks. Claim 10 has been considered but the remarks do not appear to be applicable to Claim 10. Claims 12-19 and 22-30 are cancelled herein. Reconsideration and withdrawal of this objection is requested.

Claims 1-30 were rejected as being anticipated under 35 U.S.C. § 102 (e) over Gopalakrishnan (U.S. Pat. No. 6,874,133). This rejection is hereby respectfully traversed.

The Examiner remarks that the reference provides each element of the claimed invention, particularly the elements of increasing the spacing of the devices. Applicant respectfully submits that in fact, the reference does not provide the elements as recited in the pending claims.

Claim 1 recites:

An automatic machine-implemented method of de-compacting a layout of a portion of an integrated circuit, comprising:

automatically enlarging a spacing between neighboring features of a path of the layout by a predetermined incremental spacing provided that the length of the path does not then exceed a predetermined dimensional constraint and provided that connectivity is maintained between the

neighboring features and any features of the layout to which the neighboring features are connected; and

repeating said enlarging for at least one other spacing of the layout.

Applicant respectfully submits that the relied upon reference teaches a compacting method as is described, for example, in the prior art described in the Background of the present application, and that as expected the compacting method attempts to decrease spacings between objects. The method of the reference teaches an increase in spacing between objects on occasion but only when a design rule is violated, see for example Col. 3 at lines 44-53, Col. 4 at lines 17-25. The method is a compaction method, wherein object spacings may be increased until a violation of a design rule constraint, typically a minimum spacing rule, is overcome.

The reference however does not teach the recited method steps of "enlarging a spacing between neighboring features of a path of the layout by a predetermined incremental spacing provided that the length of the path does not then exceed a predetermined dimensional constraint.." and "...repeating said enlarging for at least one other spacing of the layout." In contrast to the compacting method of the reference, the invention claimed in Claim 1, is drawn to a method of enlarging spacings within a layout unless a predetermined dimensional constraint is exceeded, and repeating the enlargements to obtain an enlarged spacing. This de-compaction method is in contrast to and in opposition to the method taught by the reference of compacting a layout. The inventive method is therefore not anticipated by the reference, and it is believed to be patentable over the reference. Reconsideration and allowance are requested.

Claim 2 depends from Claim 1 and adds the step of "repeating said enlarging until all enlargeable spacings are enlarged." Applicant respectfully submits that this claim, a dependent claim, is allowable by virtue of incorporating the allowable features of Claim 1. Further, this

claim is allowable because the compaction method of the reference does not provide a method of enlarging spacings as recited in Applicant's inventive de-compacting method, the reference method is directed to decreasing spacings unless a design rule prevents it; in contrast, the invention of Claim 2 is directed to repeating enlarging of spaces. Reconsideration and allowance are therefore respectfully requested.

Claim 3 depends from Claim 2 and adds the step of enlarging from the smallest space of the layout. The Examiner remarked that the compaction reference teaches this step, however Applicant submits that the reference does not show, teach or suggest the steps of Claim 3. Alternatively, Claim 3 is allowable as it incorporates the allowable method steps of Claim 1.

Claim 4 recites an additional method step wherein the predetermined constraint used in Claim 1 is a critical path length. The reference does not show teach or suggest enlarging a spacing until the length of a path does not exceed a critical path length, the reference teaches increasing spacings only to meet a minimum spacing design rule. Accordingly, Applicants believe that Claim 4 teaches a method step that is allowable over the reference. Further this dependent claim includes the allowable method steps of Claim 1. Reconsideration and allowance are requested.

Claim 5 depends from Claim 1 and similarly to Claim 4, recites a method wherein the predetermined dimensional constraint is a dimension of an area available in a first direction. As explained above, in contrast the reference teaches increasing a spacing only until a design rule violation is overcome.

Claim 6 recites further method steps on the method of Claim 1 and is again directed to enlarging a spacing between features to enlarge spacing in a layout. For the reasons given above for Claim 1, Claim 6 is likewise believed to be allowable.

Claim 7 is cancelled herein as this limitation is now incorporated in Claim 1.

Claims 8-9 likewise add additional method steps to the method of Claim 1. These method steps are also believed to be allowable over the reference. In particular, the steps of Claim 8 of reducing spacing in the neighbors when a spacing is enlarged is not believed to be shown or taught by the reference. Further, the step of "enlarging the spacing as many times as is enlargeable" of Claim 9 is not shown or taught by the reference, as is discussed above.

Claim 1 and each of the dependent claims 2-6 and 8-9 are, therefore, believed to be allowable. Reconsideration and allowance are respectfully requested.

Claim 10 is another independent method claim that was likewise rejected. This claim is also believed to be allowable.

Claim 10 recites, *inter alia*, the steps of:

b) automatically enlarging a spacing between first and second features of a path of said layout by a predetermined amount, provided that the length of said path does not then exceed said predetermined dimensional constraint and provided that connectivity is maintained between said first and second features and any features of the layout to which said first and second features are connected, when said spacing is smaller by said predetermined amount than the larger of a first neighbor spacing between said first feature and a third feature of said path neighboring said first feature, and a second neighbor spacing between said second feature and a fourth feature of said path neighboring said second feature; and

c) repeating said step b) in order from a smallest said spacing enlargeable by said step b) until all spacings enlargeable by said step b) are enlarged as many times as enlargeable. As described above, the reference teaches a compaction method which may increase spacing to relieve a design rule violation. However, in contrast, the claimed method enlarges spaces in an

interactive method until all spacings are "enlarged as many times as enlargeable." This method is clearly not shown, taught or suggested, and therefore Claim 10 is also believed to be allowable. Reconsideration and allowance are therefore respectfully requested.

Claims 31-42 are added herein. Claim 31, an independent method claim, is directed to the method of the invention as depicted in Figure 3. In this iterative method, spacings in a layout portion are enlarged in an iterative method. As described above, this inventive de-compaction method is in contrast to the compacting methods of the reference, which increase spacings only to relieve a design rule violation. Accordingly, Claim 31 is believed to be allowable over the reference. New claims 32-34 depend from and recite additional allowable steps on Claim 31. These claims recite additional method steps, which are likewise believed to be allowable over the reference.

Claims 35 and 36-38 recite a machine readable medium containing instructions for an inventive method with allowable method steps, analogous to claims 31 and its dependent claims. Claims 39 and 40-42 likewise recite a system with a processor for performing method steps analogous to the methods of Claims 31 and 32-34. Each of these newly submitted claims is believed to be allowable over the reference. Accordingly, consideration and allowance of these newly submitted claims are also respectfully requested.

In view of the above, Applicant respectfully submits that the application is in condition for allowance and requests that the Examiner pass the case to issuance. If the Examiner should have any questions, Applicant requests that the Examiner contact Applicant's attorney at 972-732-1001 so that such issues may be resolved as expeditiously as possible. No fee is believed due in connection with this filing. However, should one be deemed due, the Commissioner is hereby authorized to charge the appropriate fees to Deposit Account No. 50-1065.

Respectfully submitted,

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Date

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